Please add claims 26-81 as follows:

1 1. (Original) A method of restarting resource reservation protocol (RSVP) processes in

2   multiple network devices, the method comprising the computer-implemented steps of:

3 entering a recovery mode;

4 sending a Hello message to a first neighbor RSVP node, wherein the Hello message

5   comprises a non-zero Recovery Time value;

6 completing the recovery mode;

7 sending a Hello message to the first neighbor RSVP node, wherein the Hello message

8   comprises a Recovery Time value of zero.

1 2. (Original) A method as recited in Claim 1, further comprising the steps of:

2 receiving, from a second neighbor RSVP node, a Hello message having a non-zero Recovery

3   Time value;

4 storing information specifying that the second neighbor RSVP node is in a recovery mode.

1 3. (Original) A method as recited in Claim 2, further comprising the steps of:

2 receiving, from the second neighbor RSVP node, a Hello message having a zero Recovery

3   Time value;

4 storing information specifying that the second neighbor RSVP node is in a normal mode.

1 4. (Original) A method as recited in Claim 2, wherein the step of creating and storing

2   second information further comprises the steps of:

3 receiving an RSVP PATH message that contains a Recovery Label;

4 forwarding the PATH message to a downstream node with the Recovery Label only in

5   response to determining that the PATH message is being sent to a node that is in

6   recovery mode.

1   5.   (Original) A method as recited in Claim 4, further comprising forwarding the PATH

2   message to a downstream node with a Suggested Label in response to determining

3   that the PATH message is being sent to a node that is not in recovery mode.

1   6.   (Original) A method as recited in any of Claims 4 or 5, wherein the determining step

2   is performed based on whether a Recovery Time value in a previously received Hello

3   message is non-zero.

1   7.   (Original) A method of restarting RSVP processes in multiple network devices, the

2   method comprising the computer-implemented steps of:

3   entering a recovery mode;

4   sending a Hello message to a first neighbor RSVP node, wherein the Hello message

5   comprises a non-zero Recovery Time value;

6   completing the recovery mode;

7   sending a Hello message to the first neighbor RSVP node, wherein the Hello message

8   comprises a Recovery Time value of zero;

9   receiving, from a second neighbor RSVP node, a Hello message having a non-zero Recovery

10   Time value;

11   storing information specifying that the second neighbor RSVP node is in a recovery mode;

12   receiving, from the second neighbor RSVP node, a Hello message having a zero Recovery

13   Time value;

14   storing information specifying that the second neighbor RSVP node is in a normal mode;

15   receiving an RSVP PATH message that contains a Recovery Label;

16   forwarding the PATH message to a downstream node with the Recovery Label only in

17   response to determining that the PATH message is being sent to a node that is in

18   recovery mode;

19   forwarding the PATH message to a downstream node with a Suggested Label in response to

20   determining that the PATH message is being sent to a node that is not in recovery

21   mode.

1   8.   (Original) A computer-readable medium carrying one or more sequences of

2   instructions for restarting resource reservation protocol (RSVP) processes in multiple

3   network devices, which instructions, when executed by one or more processors, cause

4   the one or more processors to carry out the steps of:

5   entering a recovery mode;

6   sending a Hello message to a first neighbor RSVP node, wherein the Hello message

7   comprises a non-zero Recovery Time value;

8   completing the recovery mode;

9   sending a Hello message to the first neighbor RSVP node, wherein the Hello message

10   comprises a Recovery Time value of zero.

1   9.   (Original) A computer-readable medium as recited in Claim 8, further comprising

2   instructions for performing the steps of:

3   receiving, from a second neighbor RSVP node, a Hello message having a non-zero Recovery

4   Time value;

5   storing information specifying that the second neighbor RSVP node is in a recovery mode.

1   10.   (Original) A computer-readable medium as recited in Claim 9, further comprising

2   instructions for performing the steps of:

3   receiving, from the second neighbor RSVP node, a Hello message having a zero Recovery

4   Time value;

5   storing information specifying that the second neighbor RSVP node is in a normal mode.

1   11.   (Original) A computer-readable medium as recited in Claim 9, wherein the step of

2   creating and storing second information further comprises instructions for performing

3   the steps of:

4   receiving an RSVP PATH message that contains a Recovery Label;

5   forwarding the PATH message to a downstream node with the Recovery Label only in

6   response to determining that the PATH message is being sent to a node that is in `

7   recovery mode.

1   12.   (Original) A computer-readable medium as recited in Claim 11, further comprising

2   instructions for forwarding the PATH message to a downstream node with a

3   Suggested Label in response to determining that the PATH message is being sent to a

4   node that is not in recovery mode.

1   13.   (Original) A computer-readable medium as recited in any of Claims 11 or12, wherein

2   the determining step is performed based on whether a Recovery Time value in a

3   previously received Hello message is non-zero.

1   14.   (Original) An apparatus for restarting resource reservation protocol (RSVP) processes

2   in multiple network devices, comprising:

3   means for entering a recovery mode;

4   means for sending a Hello message to a first neighbor RSVP node, wherein the Hello

5   message comprises a non-zero Recovery Time value;

6   means for completing the recovery mode;

7   means for sending a Hello message to the first neighbor RSVP node, wherein the Hello

8   message comprises a Recovery Time value of zero.

1   15.   (Original) An apparatus as recited in Claim 14, further comprising:

2   means for receiving, from a second neighbor RSVP node, a Hello message having a non-zero

3   Recovery Time value;

4   means for storing information specifying that the second neighbor RSVP node is in a

5   recovery mode.

1   16.   (Original) An apparatus as recited in Claim 15, further comprising:

2   means for receiving, from the second neighbor RSVP node, a Hello message having a zero

3   Recovery Time value;

4   means for storing information specifying that the second neighbor RSVP node is in a normal

5   mode.

1   17.   (Original) An apparatus as recited in Claim 15, wherein the means for creating and

2   storing second information further comprises:

3   means for receiving an RSVP PATH message that contains a Recovery Label;

4   means for forwarding the PATH message to a downstream node with the Recovery Label

5   only in response to determining that the PATH message is being sent to a node that is

6   in recovery mode.

1   18.   (Original) An apparatus as recited in Claim 17, further comprising means for

2   forwarding the PATH message to a downstream node with a Suggested Label in

3   response to determining that the PATH message is being sent to a node that is not in

4   recovery mode.

1   19.   (Original) An apparatus as recited in any of Claims 17 or 18, wherein the means for

2   determining is based on whether a Recovery Time value in a previously received

3   Hello message is non-zero.

1   20.   (Original) An apparatus for restarting resource reservation protocol (RSVP) processes

2   in multiple network devices, comprising:

3   a network interface that is coupled to the data network for receiving one or more packet

4   flows therefrom;

5   a processor;

6   one or more stored sequences of instructions which, when executed by the processor, cause

7   the processor to carry out the steps of:

8   entering a recovery mode;

9   sending a Hello message to a first neighbor RSVP node, wherein the Hello message

10   comprises a non-zero Recovery Time value;

11   completing the recovery mode;

12   sending a Hello message to the first neighbor RSVP node, wherein the Hello message

13   comprises a Recovery Time value of zero.

1   21.   (Original) An apparatus as recited in Claim 20, further comprising sequences of

2   instructions for performing the steps of:

3   receiving, from a second neighbor RSVP node, a Hello message having a non-zero Recovery

4   Time value;

5   storing information specifying that the second neighbor RSVP node is in a recovery mode.

1   22.   (Original) An apparatus as recited in Claim 21, further comprising the steps of:

2   receiving, from the second neighbor RSVP node, a Hello message having a zero Recovery

3   Time value;

4   storing information specifying that the second neighbor RSVP node is in a normal mode.

1   23.   (Original) An apparatus as recited in Claim 21, wherein the step of creating and

2   storing second information further comprises the steps of:

3   receiving an RSVP PATH message that contains a Recovery Label;

4   forwarding the PATH message to a downstream node with the Recovery Label only in

5   response to determining that the PATH message is being sent to a node that is in

6   recovery mode.

1   24.   (Original) An apparatus as recited in Claim 23, further comprising forwarding the

2   PATH message to a downstream node with a Suggested Label in response to

3   determining that the PATH message is being sent to a node that is not in recovery

4   mode.

1   25.   (Original) An apparatus as recited in any of Claims 23 or 24, wherein the

2   determining step is performed based on whether a Recovery Time value in a

3   previously received Hello message is non-zero.

1   26.   (New) A method of restarting resource reservation protocol (RSVP) processes in

2   multiple network devices, the method comprising the computer-implemented steps of:

3   receiving a first downstream message containing first path data;

4   based on said first path data, generating first recovery data, wherein the first

5   recovery data includes data identifying a neighbor RSVP node and a target

6   RSVP node;

7   sending a second downstream message containing the first recovery data to the

8   neighbor RSVP node;

9   receiving a first upstream message from the neighbor RSVP node containing

10   second recovery data, wherein the second recovery data identifies an

11   original RSVP route; and

12   based on the second recovery data, updating the first path data to correspond to

13   the original RSVP route.

1   27.   (New) A method as recited in Claim 26, further comprising:

2   causing the neighbor RSVP node to receive the second downstream message

3   containing the first recovery data;

4   based on the second downstream message, causing the neighbor RSVP node to

5   retrieve original path data, wherein the original path data indicates the

6   original RSVP route;

7   based on the original path data, causing the neighbor RSVP node to generate

8   second recovery data; and

9   causing the neighbor RSVP node to send the first upstream message containing

10   the second recovery data.

1   28.   (New) A method as recited in Claim 27, wherein causing the neighbor RSVP

2   node to retrieve original path data includes:

3   causing the neighbor RSVP node to determine if the second downstream message

4   is associated with incoming RSVP PATH data;

5   causing the neighbor RSVP node to determine if the second downstream message

6   is associated with forwarding data; and

7   based on determining that the second downstream message is associated with both

8   incoming RSVP PATH data and forwarding data, causing the neighbor

9   RSVP node to retrieve original path data.

10   29.   (New) A method as recited in Claim 26, wherein the first and second downstream

11   messages are RSVP PATH messages and the first upstream message is an RSVP RESV

12   message.

13

14   30.   (New) A method as recited in Claim 26, wherein the first downstream message is

15   an RSVP PATH message containing a Recovery Label.

1   31.   (New) A method as recited in Claim 26, wherein the first path data indicates an

2   RSVP route.

1   32.   (New) A method as recited in Claim 26, wherein the first path data is an Explicit

2   Route Object.

1   33.   (New) A method as recited in Claim 26, further comprising:

9

2   based on the first downstream message, generating outgoing path data, wherein

3   the outgoing path data includes an Explicit Route Object corresponding to

4   the first path data received in the first downstream message.

1

1   34.   (New) A method as recited in Claim 26, wherein generating first recovery data

2   includes performing a partial expansion of an Explicit Route Object contained in a

3   received RSVP PATH message and storing the results of the partial expansion in a

4   Recovery Explicit Route Object.

1   35.   (New) A method as recited in Claim 34, wherein performing a partial expansion

2   of the Explicit Route Object contained in the received RSVP PATH message includes:

3   based on forwarding data, identifying a strict next hop in an RSVP path, wherein

4   the strict next hop is a neighbor RSVP node; and

5   based on the first path data, identifying a loose hop in an RSVP path, wherein the

6   loose hop identifies a target RSVP node.

1   36.   (New) A method as recited in Claim 26, further comprising:

2   identifying a Recovery Explicit Route Object in the first upstream message

3   received from the neighbor RSVP node, wherein the first upstream

4   message also includes reservation data;

5   before processing the reservation data, extracting the Recovery Explicit Route

6   Object from the first upstream message; and

7   based on the Recovery Explicit Route Object, updating a Explicit Route Object in

8   the first path data.

1   37.   (New) A method of restarting resource reservation protocol (RSVP) processes in

2   multiple network devices, the method comprising the computer-implemented steps of:

3   receiving a first RSVP PATH message with a Recovery Label from an upstream node,

4   wherein the first RSVP PATH message includes an Explicit Route Object

5   containing data identifying a target RSVP node;

6   identifying forwarding data associated with the first RSVP PATH message;

7   based on the forwarding data, identifying a neighbor RSVP node;

8   performing a partial expansion of the Explicit Route Object of the first RSVP PATH

9   message to include the identified neighbor RSVP node and the identified target

10   RSVP node;

11   storing the results of the partial expansion in a Recovery Explicit Route Object;

12   sending a second RSVP PATH message to the neighbor RSVP node, wherein the second

13   RSVP PATH message includes the generated Recovery Explicit Route Object;

14   causing the neighbor RSVP node to receive the second RSVP PATH message containing

15   the Recovery Explicit Route Object;

16   based on the Recovery Explicit Route Object, causing the neighbor RSVP node to

17   retrieve original path data, wherein the original path data indicates the original

18   RSVP route;

19   based on the original path data, causing the neighbor RSVP node to generate a second

20   Recovery Explicit Route Object;

21   causing the neighbor RSVP node to send an RSVP RESV message containing the second

22   Recovery ERO;

23   receiving the RSVP RESV message from the neighbor RSVP node; and

24   based on the second Recovery Explicit Route Object contained in the received RSVP

25   RESV message, updating the Explicit Route Object to correspond to the original

26   RSVP route.

1   38.   (New) A computer-readable medium carrying one or more sequences of

2   instructions for restarting resource reservation protocol (RSVP) processes in multiple

3   network devices, which instructions, when executed by one or more processors, cause the

4   one or more processors to carry out the steps of:

5   receiving a first downstream message containing first path data;

6   based on said first path data, generating first recovery data, wherein the first

7   recovery data includes data identifying a neighbor RSVP node and a target

8   RSVP node; and

9   sending a second downstream message containing the first recovery data to the

10   neighbor RSVP node;

11

11   receiving a first upstream message from the neighbor RSVP node containing

12   second recovery data, wherein the second recovery data identifies an

13   original RSVP route; and

14   based on the second recovery data, updating the first path data to correspond to

15   the original RSVP route.

1 39. (New) A computer-readable medium as recited in Claim 38, further comprising

2 instructions for performing the steps of:

3   causing the neighbor RSVP node to receive the second downstream message

4   containing the first recovery data;

5   based on the second downstream message, causing the neighbor RSVP node to

6   retrieve original path data, wherein the original path data indicates the

7   original RSVP route;

8   based on the original path data, causing the neighbor RSVP node to generate

9   second recovery data; and

10   causing the neighbor RSVP node to send the first upstream message containing

11   the second recovery data.

1 40. (New) A computer-readable medium as recited in Claim 39, wherein causing the

2 neighbor RSVP node to retrieve original path data includes:

3   causing the neighbor RSVP node to determine if the second downstream message

4   is associated with incoming RSVP PATH data;

5   causing the neighbor RSVP node to determine if the second downstream message

6   is associated with forwarding data; and

7   based on determining that the second downstream message is associated with both

8   incoming RSVP PATH data and forwarding data, causing the neighbor

9   RSVP node to retrieve original path data.

1 41. (New) A computer-readable medium as recited in Claim 38, wherein generating

2 first recovery data includes performing a partial expansion of the Explicit Route Object

3 contained in a received RSVP PATH message and storing the results of the partial

4 expansion in a Recovery Explicit Route Object.

1 42. (New) A computer-readable medium as recited in Claim 38, further comprising

2 instructions for performing the steps of:

3   identifying a Recovery Explicit Route Object in the first upstream message

4   received from the neighbor RSVP node, wherein the first upstream

5   message also includes reservation data;

6   before processing the reservation data, extracting the Recovery Explicit Route

7   Object from the first upstream message; and

8   based on the Recovery Explicit Route Object, updating the Explicit Route Object

9   in the first path data.

1 43. (New) An apparatus for restarting resource reservation protocol (RSVP) processes

2 in multiple network devices, comprising:

3   means for receiving a first downstream message containing first path data;

4   based on said first path data, means for generating first recovery data, wherein the

5   first recovery data includes data identifying a neighbor RSVP node and a

6   target RSVP node;

7   means for sending a second downstream message containing the first recovery

8   data to the neighbor RSVP node;

9   means for receiving a first upstream message from the neighbor RSVP node

10   containing second recovery data, wherein the second recovery data

11   identifies an original RSVP route; and

12   based on the second recovery data, means for updating the first path data to

13   correspond to the original RSVP route.

1   44.   (New) An apparatus as recited in Claim 43, further comprising:

2   means for causing the neighbor RSVP node to receive the second downstream

3   message containing the first recovery data;

4   based on the second downstream message, means for causing the neighbor RSVP

5   node to retrieve original path data, wherein the original path data indicates

6   the original RSVP route;

7   based on the original path data, means for causing the neighbor RSVP node to

8   generate second recovery data; and

9   means for causing the neighbor RSVP node to send the first upstream message

10   containing the second recovery data.

1   45.   (New) An apparatus as recited in Claim 44, wherein causing the neighbor RSVP

2   node to retrieve original path data includes:

3   causing the neighbor RSVP node to determine if the second downstream message is

4   associated with incoming RSVP PATH data;

5   causing the neighbor RSVP node to determine if the second downstream message is

6   associated with forwarding data; and

7   based on determining that the second downstream message is associated with both

8   incoming RSVP PATH data and forwarding data, causing the neighbor RSVP

9   node to retrieve original path data.

1   46.   (New) An apparatus as recited in Claim 43, wherein generating first recovery data

2   includes performing a partial expansion of the Explicit Route Object contained in a

3   received RSVP PATH message and storing the results of the partial expansion in a

4   Recovery Explicit Route Object.

1   47.   (New) An apparatus as recited in Claim 43, further comprising:

2   means for identifying a Recovery Explicit Route Object in the first upstream

3   message received from the neighbor RSVP node, wherein the first

4   upstream message also includes reservation data;

14

5   before processing the reservation data, means for extracting the Recovery Explicit

6   Route Object from the first upstream message; and

7   based on the Recovery Explicit Route Object, means for updating the Explicit

8 Route Object in the first path data.

1 48.   (New) An apparatus for restarting resource reservation protocol (RSVP) processes

2 in multiple network devices, comprising:

3 a network interface that is coupled to the data network for receiving one or more packet

4   flows therefrom;

5 a processor;

6 one or more stored sequences of instructions which, when executed by the processor,

7   cause the processor to carry out the steps of:

8   receiving a first downstream message containing first path data;

9   based on said first path data, means for generating first recovery data, wherein the

10   first recovery data includes data identifying a neighbor RSVP node and a

11   target RSVP node;

12   sending a second downstream message containing the first recovery data to the

13   neighbor RSVP node;

14   receiving a first upstream message from the neighbor RSVP node containing

15   second recovery data, wherein the second recovery data identifies an

16   original RSVP route; and

17   based on the second recovery data, means for updating the first path data to

18   correspond to the original RSVP route.

1 49.   (New) An apparatus as recited in Claim 48, further comprising sequences of
2 instructions for performing the steps of:
3   causing the neighbor RSVP node to receive the second downstream message
4   containing the first recovery data;
5   based on the second downstream message, causing the neighbor RSVP node to
6   retrieve original path data, wherein the original path data indicates the
7   original RSVP route;
8   based on the original path data, causing the neighbor RSVP node to generate
9   second recovery data; and
10   causing the neighbor RSVP node to send the first upstream message containing
11   the second recovery data.

1 50.   (New) An apparatus as recited in Claim 49, wherein causing the neighbor RSVP
2 node to retrieve original path data includes:
3 causing the neighbor RSVP node to determine if the second downstream message is
4   associated with incoming RSVP PATH data;
5 causing the neighbor RSVP node to determine if the second downstream message is
6   associated with forwarding data;
7 based on determining that the second downstream message is associated with both
8   incoming RSVP PATH data and forwarding data, causing the neighbor RSVP
9   node to retrieve original path data.

1 51.   (New) An apparatus as recited in Claim 49, wherein generating first recovery data
2 includes performing a partial expansion of the Explicit Route Object contained in a
3 received RSVP PATH message and storing the results of the partial expansion in a
4 Recovery Explicit Route Object.

1 52.   (New) An apparatus as recited in Claim 49, further comprising sequences of
2 instructions for performing the steps of:

3   identifying a Recovery Explicit Route Object in the first upstream message received

4   from the neighbor RSVP node, wherein the first upstream message also

5   includes reservation data;

6   before processing the reservation data, extracting the Recovery Explicit Route Object

7   from the first upstream message; and

8 based on the Recovery Explicit Route Object, updating the Explicit Route Object in the first

9 path data.